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NIDA Study Suggests Low-Key Anti-Smoking Ads Are More Likely to Be Remembered than Attention-Grabbing Messages
High Sensation Images Compete with Public Health Message

For the first time, preliminary research using brain-imaging technology has shown that low-key and attention-grabbing anti-smoking public service announcements stimulate different patterns of activity in smokers' brains and that smokers are more likely to remember seeing the low-key PSAs. The study, published May 15, 2009 in the journal *NeuroImage*, was supported by the National Institute on Drug Abuse (NIDA) and the National Cancer Institute, both components of the National Institutes of Health.

Televised PSAs are an important element of campaigns that promote smoking cessation, drug abuse prevention, and other public health causes. Some PSAs take a low-key, "just the facts" approach to conveying their message, while others use attention-grabbing features such as fast pacing with frequent cuts, dramatic narration, bright colors, loud music, and shocking or surprising visual images. This study found that regions of the brain associated with attention (the frontal cortex) and memory (the temporal cortex) were more active when participants were watching the low-key PSAs compared to the more dramatic attention-grabbing PSAs.

"This study highlights the feasibility of using functional magnetic resonance imaging (fMRI) to determine how the brain processes drug prevention messages," says NIDA Director Dr. Nora Volkow. "The next step is to determine whether better memory for the low key-PSAs translates into changing attitudes and behaviors. Ultimately this could improve our strategies for communicating public health information."

Message sensation value (MSV) is a well-established concept in the health communications field that reflects the extent to which PSAs employ attention-grabbing features. High-MSV PSAs use many such features; low-MSV messages employ few. In this study, scientists used fMRI to visualize patterns of brain activity in 18 adult smokers who watched a series of anti-smoking PSAs. High-MSV and low-MSV PSAs were

shown in random order, interspersed with video clips from a wildlife documentary.

An area at the back of the brain associated with visual information processing (the occipital cortex) was more active when participants were watching the high-MSV PSAs than when they were watching either the low-MSV PSAs or the neutral video clips. By contrast, regions of the brain associated with attention and memory were more active when participants were watching the low-MSV PSAs. Afterward, participants were more likely to remember having seen images from the low-MSV PSAs than images from either the high-MSV PSAs or the neutral videos.

The study “is the first scientific report to demonstrate a neurobiological basis for a concept (MSV) in health communications research,” says the principal investigator, Dr. Daniel D. Langleben of the University of Pennsylvania in Philadelphia. “Our findings suggest that the attention-grabbing high-MSV format may impede the learning and retention of a PSA. The findings are also novel in that they offer a general approach for objectively evaluating PSAs before they are released.”

Study participants were asked only which PSAs they remembered seeing, not whether seeing any of the PSAs altered their attitude about smoking. Dr. Langleben and his colleagues are testing attitude change in a follow-up study, also using fMRI.

Dr. Langleben and his colleagues in the Department of Psychiatry at the University of Pennsylvania collaborated on this study with researchers from the university’s Annenberg School of Communication.

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